

WHAT IS CLAIMED IS

1. A read mechanism used in a contact atomic resolution storage system, comprising:
 - a cantilever disposed with a medium which is movable relative to the cantilever, the cantilever having a probe which extends from the cantilever and which contacts a surface of the medium;
 - a pod formed on a side of the cantilever facing the medium, the pod extending toward the media; and
 - a sensor element formed on the pod so as to juxtapose the medium.
2. A read mechanism as set forth in claim 1, wherein the pod is formed immediately adjacent the probe.
3. A read mechanism as set forth in claim 1, wherein the pod at least partially encloses the probe.
4. A read mechanism as set forth in claim 1, wherein the pod is essentially annular and surrounds the probe.
5. A read mechanism as set forth in claim 1, wherein the sensor element forms part of a device which is responsive to an electric field between the medium and the cantilever.
6. A read mechanism as set forth in claim 5, wherein the sensor element forms part of a FET (field effect transistor).
7. A read mechanism as set forth in claim 6, wherein the FET is a depletion mode FET.
8. A read mechanism as set forth in claim 6, wherein the FET is an enhancement mode FET.

9. A read mechanism as set forth in claim 1, wherein the sensor element forms part of a device which heats the sensor element and detects the proximity of the medium through heat loss between the sensor element and a gaseous medium between the sensor element and the medium.
10. A read mechanism as set forth in claim 6, wherein one of the probe and the medium is electrically non-conductive, and wherein the medium is supported on a substrate which is electrically conductive, and wherein the substrate is circuited with the FET so that variations in the electrical field which result from the distance between the medium and the cantilever changing, induces a change in electrical current passing through the FET and produces a read signal.
11. A read mechanism used in a contact atomic resolution storage system, comprising:
- a cantilever disposed with an electrically non-conductive medium which is movable relative to the cantilever, the cantilever having a probe which follows a topography of the medium;
 - a sensor pod which is formed on the cantilever proximate the probe and which extends toward the medium; and
 - a device formed in the cantilever which responds to a change in distance between the cantilever and a substrate on which the medium is supported.
12. A read mechanism as set forth in claim 11, further comprising a sensor element formed at a leading end of the pod so as to be oriented toward the medium.
13. A read mechanism as set forth in claim 11, wherein the device is a FET and wherein the sensor element forms an operative part of the FET.
14. A method of making a read mechanism for a contact atomic resolution storage system comprising:

- forming a cantilever;
- forming a sensor support extension pod on the cantilever;
- forming a probe on the cantilever so as to have a predetermined spatial relationship with the pod;
- orienting the pod and the probe towards a medium which is movable relative to the probe and in which a data indicative topography is formed;
- adapting the probe to follow a data indicative topography of the medium;
- and
- forming a sensor element in a portion of the sensor support extension pod juxtaposed the medium.

15. A method as set forth in claim 14, wherein the step of forming the sensor element comprises forming a FET (Field Effect Transistor) and which further comprises forming the medium on an electrically conductive substrate which is circuited with the FET to produce an electric field.

16. A method as set forth in claim 15, further comprising forming one of the probe and the medium of an electrically non-conductive material.

17. A method of using a read mechanism for a contact atomic resolution storage system comprising:

- moving a probe supported on a cantilever relative to a medium which has a data indicative topography that is followed by the probe; and
- sensing a change in distance between the cantilever and the medium using a change in current flowing through a sensor element formed in a face of the probe juxtaposed the medium.

18. A method as set forth in claim 17, further comprising:

- using a FET (Field Effect Transistor) as the sensor element formed in the sensor support extension pod; and
- producing an electric field between a substrate on which the medium is supported and the cantilever.

19. A method as set forth in claim 17, further comprising:
using an electrically heated element as the sensor element formed in the sensor support extension pod; and
varying and the amount of heat which is removed from the sensor element in accordance with the variation in distance between the sensor element and the medium.